



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/937,351	11/30/2001	Barry John Welch	3164.149USWO	7926
23552	7590	01/14/2004	EXAMINER	
MERCHANT & GOULD PC P.O. BOX 2903 MINNEAPOLIS, MN 55402-0903			MACK, COREY D	
		ART UNIT	PAPER NUMBER	
		2855		

DATE MAILED: 01/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	09/937,351	WELCH ET AL.	
	Examiner	Art Unit	
	Corey D. Mack	2855	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 11 November 2001.

2a) This action is **FINAL**.                    2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-21 and 24-32 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) \_\_\_\_\_ is/are rejected.

7) Claim(s) 22 and 23 is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 20 August 2002 is/are: a) accepted or b) objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. §§ 119 and 120

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) All    b) Some \*    c) None of:

        1. Certified copies of the priority documents have been received.

        2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.

        3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    \* See the attached detailed Office action for a list of the certified copies not received.

13) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

    a) The translation of the foreign language provisional application has been received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

#### Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ .

4) Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_ .

5) Notice of Informal Patent Application (PTO-152)

6) Other: \_\_\_\_\_ .

## **DETAILED ACTION**

### ***Claim Objections***

1. Claim 32 is objected to because of the following informalities: line 4 of the claim includes a period (.) after “vessel” that appears to be misplaced. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 12 and 33-36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 12 recites “The *flow meter* of claim 10 or claim 11” in line 1. However, neither claim 10 nor any of the claims from which it depends recites a “flow meter”. It is unclear from the claim what is being referred to by “flow meter”. Therefore, the claim is rendered indefinite.

4. Claims 33-36 do not clearly outline the subject matter of the invention and fail to conform to current U.S. practice. Therefore, the claims are rendered indefinite. Further, examination of these claims on the merits has not been performed. Appropriate correction or cancellation is required.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 2, 3, 4, 5, 11, 20, 21, 24, 25, 26, 27, 28, 29, 30, 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Satake, et al. (US 5,798,466).

A. With respect to Claims 1, 11, and 25, Satake, et al. disclose determining a flow rate of a flowable material including: passing an inlet stream of flowable material G through a chamber 3 having an outlet aperture 6 to one end thereof; measuring a first rate of change of quantity of material QA in the chamber when the material is entering at said inlet flow rate (column 12, lines 8-31); measuring a second rate of change of quantity of material QB in the chamber (column 12, line 60 – column 13, line 5); and, calculating the inlet flow rate from said first and second rates wherein measuring the second rate and calculating the inlet flow rate is performed while the outlet aperture is occupied by flowable material (column 13, lines 10-35). Satake, et al. do not explicitly disclose measuring the second rate of change when no material is entering the chamber. However, Satake, et al. do disclose a dynamic flow rate measuring device that continuously measures rate of change and is a positive correlation to the actual flow rate. It would have been well-within the knowledge and understood by one of ordinary skill in the art that this device measured rate of change when no material was flowing into the chamber as often occurred during these types of processes. See MPEP §2144.03. Therefore, at the time the invention was made, it would have been obvious to one of ordinary skill in the art to include in Satake, et al. measuring flow rates using both positive inlet and no inlet flow conditions.

B. With respect to Claims 2, 20 and 27, Satake, et al. disclose the claimed invention, except they do not explicitly disclose that the outlet aperture has a cross-sectional area such that, in use,

flowable material flows from the outlet aperture at a rate less than the minimum flow rate to be measured. Satake, et al. do disclose movable valve device 10 having a pivot valve member 9 that is movable intermediately between open and closed positions A, B to control the flow of material out of the chamber to allow flow rate measurements to be made at a desired rate (column 9, line 44 – column 10, line 30). This structure would perform the same function as the claimed invention. Therefore, at the time the invention was made, it would have been obvious to one of ordinary skill in the art to include in Satake, et al. an outlet aperture that allows flow to pass at a rate less than the minimum rate to be measured.

C. With respect to Claims 3 and 21, Satake, et al. disclose that the first rate of change QA is calculated by measuring the time interval for the mass of material to pass from a first mass to a second mass (column 11, line 44 – column 12, line 31), and the second rate of change QB is calculated by measuring the time interval (X2-X1) for the mass of material to pass from a third mass Y1 to a fourth mass Y2 (column 12, line 32 – column 13, line 5).

D. With respect to Claim 4, Satake, et al. disclose that the fourth mass equals the first mass and the third mass equals the second mass (column 11, line 44 – column 13, line 5).

E. With respect to Claim 5, Satake, et al. disclose measuring the first rate of change prior to measuring the second rate of change (column 11, line 39 – column 13, line 5).

F. With respect to Claim 24, Satake, et al. disclose the claimed invention, including a flow control means 90 that that utilizes a calculate flow rate versus flow control means setting expression to control the rate of flow of flowable material discharged from a storage vessel (column 18, line 42 – column 19, line 65).

G. With respect to Claim 26, Satake, et al. disclose the claimed invention, including that the first and second flow rate settings are the settings for flow rates towards the maximum and minimum ends of the flow rate range (See Fig. 6).

H. With respect to Claim 28, Satake, et al. disclose the claimed invention, including setting the flow control means at the setting required to obtain a required flow rate as calculated by the flow rate versus flow control means setting expression; and, recalibrating the rate at which flowable material is discharged through the flow control means to obtain a recalibrated flow rate versus flow control means setting expression (column 11, line 20 – column 15, line 8).

I. With respect to Claim 29, Satake, et al. disclose the claimed invention, including that the recalibration step is conducted when a precondition, such as a change in particulate material, is met.

J. With respect to Claims 30, 31 and 32, Satake, et al. disclose the claimed invention, except they do not explicitly disclose the preconditions set forth in the claim. However, preconditions, such as a change in the required feed rate from the maximum feed rate or adjusting the measurement range, would have been well-within the knowledge of one of ordinary skill in the art depending on the application to achieve increased flow meter accuracy. (See MPEP § 2144.03). Therefore, at the time the invention was made, it would have been well-within the knowledge of one of ordinary skill in the art to include in Satake, et al. calibrating or recalibrating the flow meter on the occurrence of a precondition in order to achieve increased meter accuracy.

7. Claims 6-10, 12, 13, 14, 15, 16, 17, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Satake, et al. (US 5,798,466) as applied to claims 1, 2, 3, 4, 5, 11, 20, 21, 24, 25, 26, 27, 28, 29, 30, 31 and 32 above, and further in view of Davies, et al. (GB 2 241 789 A).

A. With respect to Claims 6, 7, 15, 16 and 19, Satake, et al. disclose the claimed invention, except they do not disclose that the outlet aperture is one of a plurality of outlet apertures the sum of which is less than the minimum flow rate to be measured. Davies, et al. disclose a particulate material flow measurement method and apparatus comprising a measuring chamber 14 having an outlet aperture that is one of a plurality of outlet apertures or elongated slots 22 and the sum of cross sectional areas of the outlet apertures is less than the minimum flow rate to be measured for the purpose of maintaining accuracy over broad flow rates (page 10, line 24 – page 11, line 5). Therefore, at the time the invention was made, it would have been within the knowledge of one of ordinary skill in the art to include in Satake, et al. multiple outlet apertures in order to maintain meter accuracy.

B. With respect to Claim 8, Satake, et al. disclose the claimed invention, except they do not disclose that the dimensions of the elongated slot are such that the flow rate of flowable material can be calculated by an open slot method. Davies, et al. disclose that the flow rate can be calculated by an open slot method in order to allow for relatively higher flows to be measured (page 11, line 7 – column 12, line 19). While Davies, et al. do not explicitly disclose that the dimensions of the elongate slot allows for the flow rates to be measured at a different time interval than in steps (b) and (c), it would have been notoriously well known that changing the dimensions of the outlet arrangement could result in different time intervals. Therefore, at the

Art Unit: 2855

time the invention was made, it would have been obvious to one of ordinary skill in the art to include in Satake, et al. calculating the flow rate by the open slot method in order to allow for measuring relatively higher flow rates.

C. With respect to Claims 9, 10, 17, Satake, et al. disclose the claimed invention, except they do not disclose that the outlet aperture is spaced apart from the elongate slot or that the chamber is elongate in an upright orientation. Davies, et al. disclose an upright chamber 18 having an outlet aperture 20 that is longitudinally spaced apart from the elongate slot 22.

D. With respect to Claims 12 and 13, Satake, et al. disclose the claimed invention, except they do not disclose a chamber base that is inclined towards the outlet aperture or shaped to facilitate even distribution to each outlet aperture. Davies, et al. disclose a chamber 13 having a conical base 23 that is inclined toward the outlet apertures 22 in order to assist in even distribution of the material towards the outlet apertures (column 11, lines 7-15). Therefore, at the time the invention was made, it would have been obvious to one of ordinary skill in the art to include in Satake, et al. a chamber shaped and inclined to effect even distribution towards the outlet apertures.

E. With respect to Claims 14 and 18, Satake, et al. disclose the claimed invention, except they do not disclose an elongate slot vertically spaced above the outlet aperture. Davies, et al. disclose elongated apertures 22 spaced vertically above the outlet aperture 20.

***Allowable Subject Matter***

8. Claims 22 and 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Corey D. Mack whose telephone number is (703) 305-3424. The examiner can normally be reached on M-F, 8:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on (703) 305-4816. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-3431.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-3431.

Corey D. Mack, Esq.  
Patent Examiner  
Art Unit 2855

January 8, 2004



EDWARD LEFKOWITZ  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800